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Sheet 1

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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| Complete if Known | | | | | |
|------------------------|---------------|--|--|--|--|
| Application Number | 10/623,382 | | | | |
| Filing Date | July 18, 2003 | | | | |
| First Named Inventor | CARSON, James | | | | |
| Art Unit | Unknown | | | | |
| Examiner Name | Unknown | | | | |
| Attorney Docket Number | 8E07.1-050 | | | | |

| | U. S. PATENT DOCUMENTS | | | | | |
|--------------------|------------------------|--|--------------------------------|--|---|--|
| Examiner Initials* | Cite No.1 | Document Number Number-Kind Code ^{2 (f known)} | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | |
| 70 | AA | ^{US-} 5,280,292 | 01-18-1994 | Matra Marconi Space | | |
| TC | AB | ^{US-} 4,633,259 | 12-30-1986 | Westinghouse Elect. | | |
| TO | AC | ^{US-} 4,503,434 | 03-05-1985 | Ford Aerospace | | |
| DT | AD | ^{US-} 6,081,233 | 06-27-2000 | Telefonaktiebolaget | | |
| DT | AE | ^{US-} 6,252,560 B1 | 06-26-2001 | Denso Corporation | | |
| DT | AF | ^{US-} 4,638,317 | 01-20-1987 | Westinghose Elect. | | |
| DT | AG | ^{US-} 5,691,728 | 11-25-1997 | TRW Inc. | | |
| DT | AH | ^{US-} 5,777,579 | 07-07-1998 | TRW Inc. | | |
| DT | Al | US- 6,225,947 B\ | 05-01-2001 | Telefonaktiebolaget | | |
| DT | AJ | ^{US-} 5,373,299 | 12-13-1994 | TRW Inc. | | |
| DL | AK | ^{US-} 4,231,040 | 10-28-1980 | Motorola, Inc. | | |
| Z | AL | ^{US-} 4,810,982 | 03-07-1989 | Hughes Aircraft Comp | | |
| 70 | AM | ^{US-} 5,455,742 | 10-03-1995 | Eaton Corporation | | |
| 70 | AN | ^{US-} 6,563,395 B2 | 05-13-2003 | Matsushita Electric | | |
| Dr | AO | ^{US-} 6,295,035 B1 | 09-25-2001 | Raytheon Company | | |
| D. | AP | ^{US-} 6,480,524 B1 | 11-12-2002 | Nortel Networks Lim | | |
| DT | AQ | ^{US-} 2002/0080066 A1 | 06-27-2002 | Dent | | |
| 20 | AR | ^{US-} 2002/0190891 A1 | 12-19-2002 | Viana ET Al. | | |
| DT | AS | ^{US-} 2003/0011519 A1 | 01-16-2003 | Breglia &T A . | | |

| | FOREIGN PATENT DOCUMENTS | | | | | | | | |
|-----------------------|--------------------------|---|---------------------|--|---|----|--|--|--|
| Examiner Initials* | | Foreign Patent Document | Publication Date | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages | | | | |
| | | Country Code ³ "Number ⁴ "Kind Code ⁶ (if known) | MM-DD-YYYY | | Or Relevant Figures Appear | T⁰ | | | |
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Examiner Signature Date Considered 11/19/04

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Sheet 2

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Complete if Known Application Number 10/623,382 Filing Date July 18, 2003 First Named Inventor CARSON, James Art Unit Unknown **Examiner Name** Unknown Attorney Docket Number 8E07.1-050

| | | | | DOCUMENTS | |
|-----------------------|--------------|--|--------------------------------|--|---|
| Examiner Initials* | Cite No.1 | Document Number Number-Kind Code ^{2 (# known)} | Publication Date MM-DD-YYYY | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
| DT | AT | ^{US-} 3,255,450 | 06-07-1966 | Butler | |
| 70 | AU | ^{US-} 2003/0038752 A1 | 02-27-2003 | Park | |
| 76 | ΑV | ^{US-} 3,295,134 | 12-27-1966 | Lowe | |
| | | US- | | | |
| | | UŞ- | | | |
| | | US- | <u> </u> | | |

| | FOREIGN PATENT DOCUMENTS | | | | | |
|--------------------|--------------------------|---|--|---|----------------------------|-------------------------|
| Examiner Initials* | | Publication Date | Name of Patentee or Applicant of Cited Document | Pages, Columns, Lines, Where Relevant Passages | | |
| | | Country Code ³ "Number ⁴ "Kind Code ³ (if known) | MM-DD-YYYY | | Or Relevant Figures Appear | Te |
| DT | ВА | 09-093008 | 04-04-1997 | Nippon Telegr & | | V |
| Dr | BB | 09-172317 | 06-30-1997 | Lucent Technol | | V |
| DT | ВС | 2002-076726 | 03-15-2002 | Mitsubishi Elec | | $\overline{\mathbf{Z}}$ |
| Dr | BD | 08-250922 | 09-27-1996 | Nippon Telegr & | | V |
| 05 | BE | 08-250923 | 09-27-1996 | Nippon Telegr & | | \overline{V} |
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| 333333 (37) (473) (3 | Application Number | 10/623,382 | | |
| INFORMATION DISCLOSURE | Filing Dat | July 18, 2003 | | |
| STATEMENT BY APPLICANT | First Named Inventor | CARSON, James | | |
| (Use as many sheets as necessary) | Art Unit | Unknown | | |
| 1000 do many another as necessary | Examiner Name | Unknown | | |
| Sheet 3 of 4 | Attorney Docket Number | 8E07.1-050 | | |

| | | NON PATENT LITERATURE DOCUMENTS | |
|-----------------------|--------------------------|---|----------------|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T ² |
| DT | CA | ACCATINO, 12319 - MultiKaRa Deliverable D4 (update) Butler Matrices: Design & Breadboard, Information Society Technologies, 03-22-2001 | |
| DT | СВ | CAILLOCE, 12319 - MULTIKARA Deliverable D6 Demonstrator specifications, Information Society Technologies, 06-08-2001 | |
| DL | СС | HAYASHI, Four-Element Planar Butler Matrix Using Half-Wavelength Open Stubs, IEEE M&WCL, March 2002, Vol. 12, No. 3, pgs 73-75 | |
| DT | CD | BONA, Low-Loss Compact Butler Matrix for a Microstrip Antenna, IEEE Transactions on MT&Tech, Sept. 2002, Vol 50, No. 9, pgs 2069-2075 | |
| DT | CE | DENIDNI, Microstrip 8X8 Butler Matrix for the Beamforming Network At 1.9 GHz Band, ISBN 84778.53495 ISRAMT'99, pgs 747-750 | |
| | CF | ACCATINO, Cad of Waveguide Butler Matrices Including Mechanical and Thermal Constraints, Abstract, 4 pages | |
| DT | CG | SHELTON, Reflective Butler Matrices, IEEE Transactions on Antennas and Propagation, Sept. 1979, Vol. AP-27, No. 5, pgs 651-659 | |
| DT | СН | ANG, A Wide-Band Monopulse Comparator With Complete Nulling in All Delta Channels Throughout Sum Channel Bandwidth, IEEE Trans on MT&T, Feb. 2003, Vol. 51, No. 2, pgs 371-373 | |
| DT | CI | BARKER, An Octave Bandwidth Monopulse Processor, IEEE, 0-7803-4603-6/97, 3 pages, | |
| DT | CJ | RICARDI, A Diplexer Using Hybrid Junctions, IEEE Transactions on Microwave Theory and Techniques, Aug. 1966, Vol. MTT-14, No. 8, pgs 364-371 | |

| Examiner | \prec (H) | Date | |
|-----------|---------------|------------|--|
| Signature | han bear | Considered | |
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¹ Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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Under the Paperwork R ersons are required to respond to a collection of information unless it contains a valid OMB control number. Complete if Known Substitute for form 1449/PTO Applicati n Number 10/623,382 INFORMATION DISCLOSURE Filing Date July 18, 2003 STATEMENT BY APPLICANT First Named Inventor CARSON, James Art Unit Unknown (Use as many sheets as necessary) **Examiner Name** Unknown Attorney Docket Number Sheet 8E07.1-050 4 of

| | | NON PATENT LITERATURE DOCUMENTS | |
|-----------------------|--------------------------|---|----|
| Examiner Initials* | Cite No. ¹ | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T² |
| DT | СК | SEKI, 30-GHz Multibeam Antenna Using Bi-Layer Butler Matrix Circuits, IEICE Trans. Commun., Dec. 1996, Vol. E79-B, No. 12, pgs 1778-1783 | |
| Dī | CL | ISOTA, A Simple Design Method of the Planar Butler Matrix Using Thin Dielectric Substrate Metalized Both Side, IEICE Trans. Electron, Feb. 2003, Vol. E86-C, No. 2, pgs 162-167 | |
| D7 | СМ | HAYASHI, Radial Open Stub and Its Application to a Simple Design of a Four-element Planar Butler Matrix, IEICE Trans. Elec., May 2002, Vol E85-C, No. 5, pgs 1164-1169 | |
| Dr | CN | UEHARA, A Planar Sector Antenna for Indoor High-Speed Wireless Communiction Systems, IEICE Trans. Commun., Dec. 1996, Vol. E79-B, No. 12, pgs 1773 - 1777 | |
| Dī | со | ANGELUCCI, Multiport Power Amplifiers for Mobile-Radio Systems Using Microstrip Butler Matrices, IEEE, 1994, 0-7803-2009-3/94, pgs 628-631 | |
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| Examiner Signature Way Tacasca | Date Considered | 11/19/04 |
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